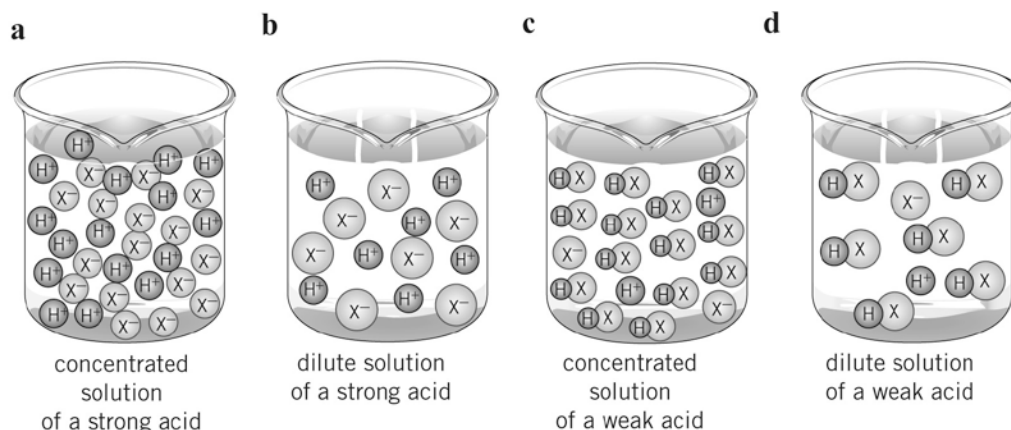


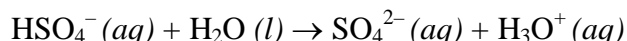
ANSWERS to Crystal ball ques on Explaining properties of aqueous solutions

1)

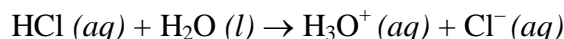


reference: Derry, Connor, Jordan. IB Diploma Programme, Standard Level, Pearson, 2007

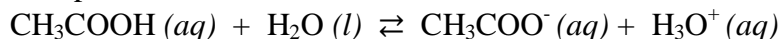
2) H_2SO_4 is a strong acid which readily donates protons in water, it is a diprotic acid, meaning that within every H_2SO_4 molecule there are 2 hydrogen atoms, both of which dissociate in water



HCl is also a strong, it is a monoprotic acid, meaning that it donates 1 hydrogen atom per molecule in an aqueous solution



CH_3COOH is a weak acid meaning that it partially dissociates in water, only about 7% of ethanoic acid dissociates. It is also a monoprotic acid.

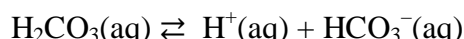


CH_3COOH has a lower concentration of H_3O^+ ions in aqueous solution than both H_2SO_4 and HCl, so has a higher pH. Because H_2SO_4 is a diprotic acid, it has a greater concentration of H_3O^+ ions produced, hence lower pH than that of HCl which is a monoprotic acid.

3) HCl is a strong acid which is fully ionized or dissociated in solution, so is an excellent conductor of electricity.



H_2CO_3 is a weak acid because it is only partly ionized or dissociated in solution:



A strong acid and a weak acid of the same concentration will react at different rates with the same size of magnesium metal.

The HCl reacts faster than the H_2CO_3 and more bubbles of hydrogen gas will be seen.

This is because the HCl has increased numbers of hydrogen ions in the solution even though it is at the same concentration as the H_2CO_3

The H_2CO_3 will produce the same volume of hydrogen as the HCl but the H_2CO_3 will take longer to do so.